

CLAIMS

What is claimed is:

1. A medical guidewire for use in intravascular medical procedures and compatible with magnetic resonance, the guidewire having proximal and distal ends, comprising:

5 a relatively long, thin core extending for substantially the length of the guidewire, the core being made of a glass having a high specific electric impedance;

a polymer sheath surrounding the core;

a plurality of reinforcing fibers affixed to at least one of the core and the polymer sheath, to enhance the flexibility and torsion characteristics of the guidewire; and

10 at least one marker positioned near a distal end of the guidewire, wherein the marker is visible under magnetic resonance due to susceptibility-induced magnetic field inhomogeneity.

2. The medical guidewire of Claim 1, further comprising a relatively short distal tip  
15 segment made of metal components affixed to the glass core at a transition point, wherein the length of the metal distal tip segment is substantially shorter than the wavelength of a magnetic resonance field.

3. The magnetic guidewire of Claim 1, wherein the reinforcing fibers are affixed to  
20 the core.

4. The magnetic guidewire of Claim 1, wherein the reinforcing fibers are affixed to the polymer sheath.

5. The magnetic guidewire of Claim 4, wherein the material of the reinforcing fibers is selected from the group consisting of carbon, borium, aramide, and glass.

5 6. The magnetic guidewire of Claim 1, wherein the material of the core is selected from the group consisting of fiberglass, silica, and quartz.

7. The magnetic guidewire of Claim 2, wherein the material of the metal distal tip segment is nitinol.

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8. The magnetic guidewire of Claim 1, wherein a distal segment of the glass core tapers to a diameter at the distal end of the guidewire that is smaller than the diameter of a major portion of the core.

15 9. The magnetic guidewire of Claim 2, wherein the polymer sheath extends continuously from a location near the proximal end of the guidewire, to a location distal of the transition point, thus surrounding at least a portion of both the glass core and the metal distal tip segment.

20 10. The magnetic guidewire of Claim 1, further comprising a short metal collar affixed to the guidewire at the transition point, to resist kinking and breakage of the guidewire at the transition point.

11. The magnetic guidewire of Claim 1, wherein the material of the marker is Dysprosium Oxide ( $\text{Dy}_2\text{O}_3$ ).

12. The magnetic guidewire of Claim 1, wherein the distal tip of the guidewire is bent  
5 slightly, to facilitate the selective steering of the guidewire along a desired vascular path.